



AMENDMENTS TO THE CLAIMS

Claim 1 (Currently Amended): A pyrogenically prepared, doped zinc oxide powder, comprising a doping component, which comprises at least one oxide selected from the group consisting of ~~the elements~~ aluminum oxides, gallium oxides, indium oxides, germanium oxides, tin oxides, and silicon oxides,

and wherein the doped zinc oxide powder is in the form of aggregates ~~[[,]]~~ having a mean maximum diameter of from 30 to ~~300~~ 400 nm,

and wherein the doping component is present in an amount from 0.005 to 15 wt.%.

Claim 2 (Currently Amended): The zinc oxide powder according to claim 1, wherein the mean maximum aggregate diameter has a value of 50 to ~~400~~ 300 nm.

Claim 3 (Currently Amended): The zinc oxide powder according to claim 1, wherein the aggregates have a largely anisotropic structure ~~[[,]]~~ defined by a form factor $F(\text{circle})$ of less than 0.5.

Claim 4 (Previously Presented): The zinc oxide powder according to claim 1, wherein the mean primary particle diameter is from 5 to 30 nm.

Claim 5 (Previously Presented): The zinc oxide powder according to claim 1, wherein the BET surface area is from 5 to 100 m²/g.

Claim 6 (Previously Presented): The zinc oxide powder according to claim 1, wherein said powder has a resistivity of not more than 10⁵ Ohm x cm.

Claim 7 (Previously Presented): The zinc oxide powder according to claim 1, wherein said powder has a transmission of at least 70 %.

Claim 8 (Currently Amended): The zinc oxide powder according to claim 1, wherein the amount of the doping component is from 0.2 to 6.0 wt.%.

Claim 9 (Previously Presented): The zinc oxide powder according to claim 1, wherein the doping component is aluminum oxide.

Claim 10 (Previously Presented): The zinc oxide powder according to claim 1, wherein the doping component is a mixture of indium oxide and tin oxide.

Claim 11 (Currently Amended): A process for the preparation of ~~the~~ zinc oxide powder ~~according to claim 1, wherein said~~ the process comprises, comprising

~~preparing said powder in four successive zones, a vaporization zone, a nucleation zone, an oxidation zone and a quenching zone, from zinc powder and at least one doping agent, the zinc oxide powder of claim 1,~~

wherein the preparing is in four successive zones, which are a vaporization zone, a nucleation zone, an oxidation zone and a quenching zone,

and wherein, in the vaporization zone, zinc powder is vaporized in a flame of air and/or oxygen and a combustion gas, to form a hot reaction mixture, with the proviso that the reaction parameters are so chosen ~~[[,]]~~ that oxidation of the zinc does not ~~occur~~ occur,

and wherein, in the nucleation zone, into which there passes the hot reaction mixture from the vaporization zone, comprising zinc vapour, water vapour as the reaction product of the flame reaction, and optionally excess combustion gas, said mixture is cooled to temperatures from 500 to 900°C or is cooled by means of an inert gas, and wherein, at least one doping agent in vaporized form, or an aerosol containing at least one doping agent, is fed in in an amount that corresponds to the desired amount of the doping agent in the zinc oxide powder, to form a mixture,

and wherein, in the oxidation zone, the mixture from the nucleation zone is oxidized with air and/or oxygen, to form an oxidation mixture,

and wherein, in the quenching zone, the oxidation mixture is cooled to temperatures less than 400°C, by the addition of cooling gas.

Claim 12 (Previously Presented): The process according to claim 11, wherein there is fed to the nucleation zone, instead of the aerosol, the at least one doping agent in vaporized form.

Claim 13 (Currently Amended): The process according to claim 11, wherein an excess of combustion gas, expressed in lambda values from 0.5 to 0.99, is used in the vaporization of zinc powder and ~~the~~ at the at least one doping agent.

Claim 14 (Previously Presented): The process according to claim 11, wherein the temperature in the nucleation zone is from 700°C to 800°C.

Claim 15 (Currently Amended): The process according to claim 11, wherein the rate of cooling is from 100 K/s to 10,000 K/s [[,]] in the nucleation zone, and from 1000 K/s to 50,000 K/s [[,]] in the quenching zone.

Claim 16 (Currently Amended): The process according to claim 11, wherein the dwell time is from 0.1 s to 4 s [[,]] in the vaporization zone, from 0.05 s to 1.00 s [[,]] in the nucleation zone, from 0.05 s to 1.00 s [[,]] in the quenching zone, and from 5 ms to 200 ms [[,]] in the oxidation zone.

Claim 17 (Previously Presented): The process according to claim 11, wherein the at least one doping agent is selected from the group consisting of halides, nitrates, alkyls, alkoxides and mixtures thereof.

Claim 18 (Previously Presented): An electrically conductive, optionally transparent lacquer or coating, comprising the zinc oxide powder of claim 1, and one or more additives.

Claim 19 (Previously Presented): A filler, comprising the zinc oxide powder of claim 1, and one or more additives.

Claim 20 (Previously Presented): A sun protection formulation, comprising the zinc oxide powder of claim 1, and one or more additives.

SUPPORT FOR THE AMENDMENT

This Amendment amends Claims 1-3, 8, 11, 13 and 15-16. Support for the amendments is found in the specification and claims as originally filed. In particular, support for Claim 1 is found in the specification at least at page 2, lines 18-19 ("aggregates having a mean maximum diameter of from 30 to 400 nm"). Support for Claim 2 is found in the specification at least at page 3, lines 23-25 ("mean maximum aggregate diameter ... of from 50 to 300 nm"). No new matter would be introduced by entry of these amendments.

Upon entry of these amendments, Claims 1-20 will be pending in this application. Claim 1 is independent.

REQUEST FOR RECONSIDERATION

Applicants respectfully request entry of the foregoing and reexamination and reconsideration of the application, as amended, in light of the remarks that follow.

Applicants thank the Examiner for the courtesies extended to their representative during the September 14, 2004, personal interview. Applicants thank the Examiner for the indication during the interview that "the EPO'380 reference [i.e., EP 0 597 380 A1] does not teach or fairly suggest the claimed aggregates and their sizes". Interview Summary dated September 14, 2006.

The present invention provides an electrically conductive doped zinc oxide powder which has high transparency. Specification at page 2, lines 9-11.

Claims 1-20 are rejected under 35 U.S.C. § 102(b) over EP 0 597 380 A1 ("EP-380"). EP-380 discloses an electrically conductive zinc oxide with high whiteness formed by oxidizing a vapor mixture of zinc and a dopant-forming metal compound. EP-380 at page 3, lines 3-11. EP-380 discloses that the zinc oxide is free of coarse particles and has a sharp particle size distribution. EP-380 at page 3, lines 4-5. EP-380 discloses that the amount of

oxidizing gas used to form the zinc oxide may be appropriately selected depending on the desired particle size and particle size distribution. EP-380 at page 4, lines 7-10.

However, EP-380 is silent about aggregates of particles and fails to suggest the independent Claim 1 limitation that "the doped zinc oxide powder is in the form of aggregates having a mean maximum diameter of from 30 to 400 nm". According to the present invention, aggregates are formed when several primary particles join together at their points of contact. Specification at page 3, lines 10-12. By controlling the mean maximum diameter of the aggregates, particularly advantageous values of electrical conductivity and transparency can be obtained. Specification at page 2, lines 9-20; page 3, lines 23-28.

Because EP-380 fails to suggest the independent Claim 1 limitation that "the doped zinc oxide powder is in the form of aggregates having a mean maximum diameter of from 30 to 400 nm", the rejection over EP-380 should be withdrawn.

Claim 7 is further patentably distinguishable over EP-380. EP-380 discloses a doped zinc oxide powder which has a high whiteness. However, whiteness is not transparency. EP-380 fails to suggest the Claim 7 limitation of a doped zinc oxide powder that "has a transmission of at least 70 %".

In view of the foregoing amendment and remarks, Applicants respectfully submit that the application is in condition for allowance. Applicants respectfully request favorable consideration and prompt allowance of the application.

Should the Examiner believe that anything further is necessary in order to place the application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,

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